

# Frontier Macromolecular Crystallography (FMX)

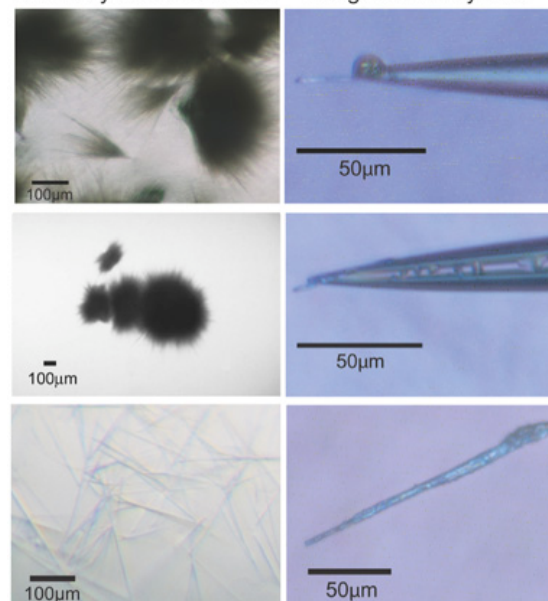
## FMX at NSLS-II

- This MX beamline will exploit the finest properties of NSLS-II and push the state of the art in x-ray optics.
- The tunable, one micron, variable divergence beam handles small crystals, and very large unit cells.
- Preserving beam coherence makes new experiments possible.
- Cryogenic automation at the state of the art provides convenience for users.

## Examples of Science Areas & Impact

- **STRUCTURAL BIOLOGY:** The most interesting structures are often the most difficult. This beamline will push new limits in crystal size.
- **BIOCHEMISTRY:** Knowledge of intermediates in enzymatic pathways expands our understanding of cellular and microbiological processes.
- **PHYSIOLOGY AND MEDICINE:** Knowing how drugs interact with their targets is essential to development of improved and new pharmacologically effective compounds.

Microcrystalline clusters      Single microcrystals



Crystals of  $\beta$  amyloid, which are always long and very thin

From: Sawaya MR, Sambashivan S, Nelson R, Ivanova MI, Sievers SA, Apostol MI, Thompson MJ, Balbirnie M, Wiltzius JJ, McFarlane HT, Madsen AØ, Riekel C, Eisenberg D. Nature 447, 453-7 (2007)

## Beamline Capabilities

**TECHNIQUE:** macromolecular crystallography

**SOURCE:** canted U20 in-vacuum undulator

**ENERGY RANGE / RESOLUTION:** 5-20 keV;  $\Delta E/E \sim 5 \times 10^{-4}$

**BEAM SIZE:** from 1x1 to 100x100  $\mu\text{m}^2$ ; diffraction resolution to 1 Å